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| 22193 | 7590 | 05/24/2005 | EXAMINER | |
| QWEST COMMUNICATIONS INTERNATIONAL INC LAW DEPT INTELLECTUAL PROPERTY GROUP 1801 CALIFORNIA STREET, SUITE 3800 DENVER, CO 80202 | | | VO, HUYEN X | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2655 | |

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,331

Applicant(s)

CASE ET AL.

Examiner

Huyen Vo

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant has submitted an amendment filed 1/7/2005, amending the base claim 1, while arguing to traverse the art rejection based on amended limitations regarding *"the impact values being determinative of where inflection changes are to take place within the sequence of speech items"* (see claim amendment and second paragraph on page 8 of the amendment). Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection necessitated by claim amendment in view of Conkie (US 6173263).

2. Page 3, lines 4-26 and pages 21-26 only disclose different pitch values, but do not include any known measurement unit associated with these pitch values.

Therefore, previous ground of rejection of claims 9-15 ~~is~~ ~~remained~~.

Allowable Subject Matter

3. Claims 16-20 are allowed over prior art of record.

4. Regarding claim 16, Coorman et al. disclose a method for converting text to concatenated voice by utilizing a digital voice library and a set of playback rules, the method further comprising: determining a syllable count for each speech item in the sequence of speech items (*col. 23, ln. 35-45 and col. 23, ln. 35-67*); determining an impact value for each speech item in the sequence of speech items (*the COST FUNCTION sections on col. 12-15 explained in claim 1 in the response to argument*

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section above); determining a pitch value within a range for each speech item in the sequence of speech items by normalizing the impact value for the particular speech item (*col. 13, ln. 48-53*); determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the pitch value for the particular speech item and further based on the set of playback rules (*col. 23, ln. 35-45 and col. 23, ln. 35-67 and the Cost Function in col. 12-15*); determining a sequence of voice recordings by determining a voice recording for each speech item based on the desired inflection for the particular speech item and based on the available voice recordings that correspond to the particular speech item (*col. 9, ln. 33-37*); and generating voice data based on the sequence of voice recordings by concatenating adjacent recordings in the sequence of voice recordings (*col. 9, ln. 51-56*). Coorman et al. fail to specifically disclose the method wherein the playback rules dictate that the desired inflection for a glue item is based on the desired inflection for surrounding payload items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items with priority being given to speech items having a greater pitch value such that the desired inflections are determined first for speech items having the greatest pitch value and, thereafter, are determined for speech items in order of descending pitch. Furthermore, it would have not been obvious to one of ordinary skill in the art at the time of invention to modify Coorman et al. by incorporating the teaching above. Therefore, claims 16-20 are allowed over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 9-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification discloses the pitch value between 1 and 5, but fails to indicate measurement unit associated with these values to enable one to understand.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (*US 6665641*) in view of Conkie (*US 6173263*).

9. Regarding claim 1, Coorman et al. disclose a method for converting text to concatenated voice by utilizing a digital voice library and a set of playback rules (*col. 8, ln. 59 to col. 9, ln. 56*), the digital voice library including a plurality of speech items and a corresponding plurality of voice recordings wherein each speech item corresponds to at least one available voice recording wherein multiple voice recordings that correspond to a single speech item represent various inflections of that single speech item (*col. 9, ln. 1-8*), the method including receiving text data, converting the text data into a sequence of speech items in accordance with the digital voice library (*col. 9, ln. 13-25*), the method further comprising: determining a syllable count for each speech item in the sequence of speech items (*col. 23, ln. 35-45*); determining a cost in concatenating two unit candidates together by calculating a mismatch between a pitch at the right-hand edge of the right speech unit candidate and the pitch at the left-hand edge of the right speech unit candidate (*col. 12, lines 40-67*); the cost function being determinative of how well speech unit candidates fit together in a sequence representative of synthesized speech (*col. 11, line 41 to col. 12, line 67*); and generating voice data based on the sequence of voice recordings by concatenating adjacent recordings in the sequence of voice recordings (*col. 9, ln. 51-56*).

Coorman et al. fail to specifically disclose the steps of determining an impact value for each speech item in the sequence of speech items, the impact values being

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determinative of where inflection changes are to take place within the sequence of speech items; determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for the particular speech item and further based on the set of playback rules; and determining a sequence of voice recordings by determining a voice recording for each speech item based on the desired inflection for the particular speech item and based on the available voice recordings that correspond to the particular speech item.

However, Conkie teaches the step of determining and assigning patterns of timing and intonation to the phonetic segment strings generated by the word pronunciation module (*col. 4, line 31 to col. 5, line 17, particularly col. 5, lines 5-17, word pronunciation module 330 in figure 3 generates phonetic segment strings from the input text. This module assign annotation or inflection to a plurality of words in the input text specifying the speech synthesizer to search for speech unit candidates matching the assigned annotation or inflection for each word in the input text*).

Since Coorman et al. and Conkie are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Coorman et al. by incorporating the teaching of Conkie et al. in order to produce human-like synthetic speech.

10. Regarding claim 8, Coorman et al. further disclose that a plurality of speech items includes a plurality of words, the method further comprising: determining a pitch value for each speech item in the sequence of speech items by normalizing the impact

value for the particular speech item (col. 10, ln. 49-55 of col. 13, ln. 48-53), wherein the desired inflection for each speech item is further based on the pitch value for the particular speech item (col. 10, ln. 43-53).

11. Claim² is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (*US 6665641*) in view of Conkie (*US 6173263*), and further in view of Jacks et al. (*US 4692941*).

12. Regarding claim 2, Coorman et al. fail to specifically disclose that the speech items are glue items and a plurality of the speech items are payload items, the method further comprising: setting a flag for any speech item in the sequence of speech items that is a glue item, wherein the playback rules dictate that the desired inflection for a glue item is based on the desired inflection for surrounding payload items in the sequence of speech items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items in the sequence of speech items.

However, Jacks teach a method of setting a flag for any speech item in the sequence of speech items that is a glue item (col. 4, ln. 48-50, the main point is to identify glue words), wherein the playback rules dictate that the desired inflection for a glue item is based on the desired inflection for surrounding payload items in the sequence of speech items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items in the sequence of speech items (col. 9, ln. 51 to col. 10, 27). The advantage of using the teaching of Jacks et al. in Coorman et

al. is to analyze the structure of the sentence and assign appropriate prosody to each word to make the synthesized speech sound more naturally.

Since the modified Coorman et al. and Jacks et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Coorman et al. by incorporating the teaching of Jacks et al. in order to analyze the structure of the sentence and assign appropriate prosody to each word to make the synthesized speech sound more natural.

13. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (*US 6665641*) in view of Conkie (*US 6173263*), further in view of Jacks et al. (*US 4692941*), and further in view of Minowa et al. (*US 6438522*).

14. Regarding claim 3, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of phrases. However, Minowa et al. teach that a plurality of speech items includes a plurality of phrases (col. 7, ln. 6-10). The advantage of using the teaching of Minowa et al. in the modified Coorman et al. is to allow the system to process phrase input speech items.

Since the modified Coorman et al. and Gasper et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et

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al. by incorporating the teaching of Gasper et al. in order to allow the system to process phrase input speech items.

15. Regarding claim 4, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of phrases. However, Minowa et al. teach that a plurality of speech items includes a plurality of words (col. 7, ln. 6-10). The advantage of using the teaching of Minowa et al. in the modified Coorman et al. is to allow the system to process single word input speech items.

Since the modified Coorman et al. and Gasper et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Gasper et al. in order to allow the system to process single word input speech items.

16. Regarding claim 5, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of syllables. However, Minowa et al. teach that a plurality of speech items includes a plurality of syllables (col. 7, ln. 10-25). The advantage of using the teaching of Gasper et al. in the modified Coorman et al. is to increase processing speed by using syllable-based segmentation scheme to reduce the number of speech models.

Since the modified Coorman et al. and Minowa et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Minowa et al. in order to increase processing speed by using syllable-based segmentation scheme to reduce the number of speech models.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (*US 6665641*) in view of Conkie (*US 6173263*), and further in view of Gasper et al. (*US 5278943*).

18. Regarding claim 6, Coorman et al. fail to specifically disclose that multiple voice recordings that correspond to a single speech item represent various inflections of that single speech item and wherein the various inflections belong to various inflection groups including a at least one standard inflection group, at least one emphatic inflection group, and at least one question inflection group. However, Gasper et al. suggest that stored recordings having different prosodic environments (col. 13, ln. 18-29). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Coorman et al. by specifically making records of these different inflections to provide the digital library a wide range of speech variations of particular words to enhance speech synthesis capabilities and increase system's reliabilities.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (US 6665641) in view of Conkie (US 6173263), further in view of Gasper et al. (US 5278943) and further in view of Jacks et al. (US 4692941).

20. Regarding claim 7, the modified Coorman et al. fail to specifically disclose that at least one question inflection group includes a single word question inflection group and a multiple word question inflection group. However, Jacks et al. teach that at least one question inflection group includes a single word question inflection group and a multiple word question inflection group (col. 9, ln. 45-50). The advantage of using the teaching of Jacks et al. in Coorman et al. is to assign appropriate pitch to word(s) in a question to make the speech sound more natural.

Since the modified Coorman et al. and Jacks et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Jacks et al. in order to assign appropriate pitch to word(s) in a question to make the speech sound more natural.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen Vo whose telephone number is 703-305-8665. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HXV

5/19/2005


SUSAN MCFADDEN
PRIMARY EXAMINER